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<212> DNA

<213> Hordeum vulgare

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Ile Asn Leu Ser Asp Arg Leu Asn Gln Val Leu Arg Trp Ala Leu Gly
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RECEIVED
APR 02 2002
TECH CENTER 1600/2900

per
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 <213> Zea mays

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 Pro Gly Ile Trp Arg Ser Gly Ser Ala Arg Gly Met Glu Ala Ser Ala
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 Gly Leu Val Ala Gly Ser His Asn Arg Asn Glu Leu Val Val Ile Arg
 65 70 75 80
 Arg Asp Gly Glu Pro Gly Pro Lys Pro Met Asp Gln Arg Asn Gly Gln
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 Val Cys Gln Ile Cys Gly Asp Asp Val Gly Arg Asn Pro Asp Gly Glu
 100 105 110
 Pro Phe Val Ala Cys Asn Glu Cys Ala Phe Pro Ile Cys Arg Asp Cys
 115 120 125
 Tyr Glu Tyr Glu Arg Arg Glu Gly Thr Gln Asn Cys Pro Gln Cys Lys
 130 135 140
 Thr Arg Phe Lys Arg Leu Lys Gly Cys Ala Arg Val Pro Gly Asp Glu
 145 150 155 160
 Glu Glu Asp Gly Val Asp Asp Leu Glu Asn Glu Phe Asn Trp Ser Asp
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 Lys His Asp Ser Gln Tyr Leu Ala Glu Ser Met Leu His Ala His Met
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 Ser Tyr Gly Arg Gly Ala Asp Leu Asp Gly Val Pro Gln Pro Phe His
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 Pro Ile Pro Asn Val Pro Leu Leu Thr Asn Gly Gln Met Val Asp Asp
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 Ile Pro Pro Asp Gln His Ala Leu Val Pro Ser Phe Val Gly Gly Gly
 225 230 235 240
 Gly Lys Arg Ile His Pro Leu Pro Tyr Ala Asp Pro Asn Leu Pro Val
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 Gly Ser Val Ala Trp Lys Glu Arg Met Glu Ser Trp Lys Gln Lys Gln
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 325 330 335
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 340 345 350
 His Pro Val Pro Asp Ala Phe Ala Leu Trp Leu Ile Ser Val Ile Cys
 355 360 365
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 385 390 395 400
 Asp Lys Glu Gly His Pro Ser Gln Leu Ala Pro Val Asp Phe Phe Val
 405 410 415
 Ser Thr Val Asp Pro Leu Lys Glu Pro Pro Leu Val Thr Ala Asn Thr
 420 425 430
 Val Leu Ser Ile Leu Ser Val Asp Tyr Pro Val Asp Lys Val Ser Cys
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 Tyr Val Ser Asp Asp Gly Ala Ala Met Leu Thr Phe Glu Ala Leu Ser
 450 455 460
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 465 470 475 480
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 485 490 495
 Tyr Leu Lys Asp Lys Val Ala Pro Asn Phe Val Arg Glu Arg Arg Ala
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 515 520 525
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 Thr Pro Trp Pro Gly Asn Asn Val Arg Asp His Pro Gly Met Ile Gln
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 His Lys Lys Ala Gly Ala Met Asn Ala Leu Val Arg Val Ser Ala Val
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Gly	Ile	Asp	Arg	His	Asp	Arg	Tyr	Ala	Asn	Arg	Asn	Val	Val	Phe	Phe	660	665	670
Asp	Ile	Asn	Met	Lys	Gly	Leu	Asp	Gly	Ile	Gln	Gly	Pro	Ile	Tyr	Val	675	680	685
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Cys	Ile	Pro	Lys	Arg	Ala	Ala	Phe	Lys	Gly	Ser	Ala	Pro	Leu	Asn	Leu	865	870	875
Ser	Asp	Arg	Leu	His	Gln	Val	Leu	Arg	Trp	Ala	Leu	Gly	Ser	Ile	Glu	885	890	895
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Ser Val Tyr Cys Thr Pro Thr Arg Pro Ala Phe Lys Gly Ser Ala Pro
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Ile Asn Leu Ser Asp Arg Leu His Gln Val Leu Arg Trp Ala Leu Gly
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Ser Val Glu Ile Phe Met Ser Arg His Cys Pro Leu Trp Tyr Ala Tyr
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Gly Gly Arg Leu Lys Trp Leu Glu Arg Phe Ala Tyr Thr Asn Thr Ile
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Val Tyr Pro Phe Thr Ser Ile Pro Leu Leu Ala Tyr Cys Thr Ile Pro
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Ala Val Cys Leu Leu Thr Gly Lys Phe Ile Ile Pro Thr Leu Asn Asn
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Leu Ala Ser Ile Trp Phe Ile Ala Leu Phe Leu Ser Ile Ile Ala Thr
 130                      135                      140

Ser Val Leu Glu Leu Arg Trp Ser Gly Val Ser Ile Glu Asp Trp Trp
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Arg Asn Glu Gln Phe Trp Val Ile Gly Gly Val Ser Ala His Leu Phe
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Asp Leu Tyr Leu Phe Lys Trp Thr Thr Leu Leu Val Pro Pro Thr Thr
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Leu Ile Ile Ile Asn Met Val Gly Ile Val Ala Gly Val Ser Asp Ala
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Val Asn Asn Gly Tyr Gly Ser Trp Gly Pro Leu Phe Gly Lys Leu Phe
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Met Gly Arg Gln Asn Arg Thr Pro Thr Ile Val Val Leu Trp Ser Ile
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Phe Arg Cys Ala Ala Ala Ala Gly Phe Val Arg Glu Arg Asp Pro Ala
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 Gln Leu Ser Arg Lys Ile Pro Leu Pro Ser Ser Gln Ile Asn Pro Tyr
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 Arg Met Ile Ile Ile Ile Arg Leu Val Val Leu Gly Phe Phe Phe His
 275 280 285
 Tyr Arg Val Met His Pro Val Asn Asp Ala Phe Ala Leu Trp Leu Ile
 290 295 300
 Ser Val Ile Cys Glu Ile Trp Phe Ala Met Ser Trp Ile Leu Asp Gln
 305 310 315 320
 Phe Pro Lys Trp Phe Pro Ile Glu Arg Glu Thr Tyr Leu Asp Arg Leu
 325 330 335
 Ser Leu Arg Phe Asp Lys Glu Gly Gln Pro Ser Gln Leu Ala Pro Ile
 340 345 350
 Asp Phe Phe Val Ser Thr Val Asp Pro Leu Lys Glu Pro Pro Leu Val
 355 360 365
 Thr Thr Asn Thr Val Leu Ser Ile Leu Ser Val Asp Tyr Pro Val Asp
 370 375 380
 Lys Val Ser Cys Tyr Val Ser Asp Asp Gly Ala Ala Met Leu Thr Phe
 385 390 395 400
 Glu Ala Leu Ser Glu Thr Ser Glu Phe Ala Lys Lys Trp Val Pro Phe
 405 410 415
 Cys Lys Arg Tyr Asn Ile Glu Pro Arg Ala Pro Glu Trp Tyr Phe Gln
 420 425 430
 Gln Lys Ile Asp Tyr Leu Lys Asp Lys Val Ala Ala Asn Phe Val Arg
 435 440 445
 Glu Arg Arg Ala Met Lys Arg Glu Tyr Glu Glu Phe Lys Val Arg Ile
 450 455 460
 Asn Ala Leu Val Ala Lys Ala Gln Lys Val Pro Glu Glu Gly Trp Thr
 465 470 475 480

Met Gln Asp Gly Thr Pro Trp Pro Gly Asn Asn Val Arg Asp His Pro
 485 490 495
 Gly Met Ile Gln Val Phe Leu Gly Gln Ser Gly Gly Leu Asp Cys Glu
 500 505 510
 Gly Asn Glu Leu Pro Arg Leu Val Tyr Val Ser Arg Glu Lys Arg Pro
 515 520 525
 Gly Tyr Asn His His Lys Lys Ala Gly Ala Met Asn Ala Leu Val Arg
 530 535 540
 Val Ser Ala Val Leu Thr Asn Ala Pro Tyr Leu Leu Asn Leu Asp Cys
 545 550 555 560
 Asp His Tyr Ile Asn Asn Ser Lys Ala Ile Lys Glu Ala Met Cys Phe
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 Met Met Asp Pro Leu Leu Gly Lys Lys Val Cys Tyr Val Gln Phe Pro
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 Gln Arg Phe Asp Gly Ile Asp Arg His Asp Arg Tyr Ala Asn Arg Asn
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 Pro Ile Tyr Val Gly Thr Gly Cys Val Phe Arg Arg Gln Ala Leu Tyr
 625 630 635 640
 Gly Tyr Asp Ala Pro Lys Thr Lys Lys Pro Pro Ser Arg Thr Cys Asn
 645 650 655
 Cys Trp Pro Lys Trp Cys Phe Cys Cys Cys Cys Phe Gly Asn Arg Lys
 660 665 670
 Gln Lys Lys Thr Thr Lys Pro Lys Thr Glu Lys Lys Lys Leu Leu Phe
 675 680 685
 Phe Lys Lys Glu Glu Asn Gln Ser Pro Ala Tyr Ala Leu Gly Glu Ile
 690 695 700
 Asp Glu Ala Ala Pro Gly Ala Glu Asn Glu Lys Ala Gly Ile Val Asn
 705 710 715 720
 Gln Gln Lys Leu Glu Lys Lys Phe Gly Gln Ser Ser Val Phe Val Thr
 725 730 735
 Ser Thr Leu Leu Glu Asn Gly Gly Thr Leu Lys Ser Ala Ser Pro Ala
 740 745 750
 Ser Leu Leu Lys Glu Ala Ile His Val Ile Ser Cys Gly Tyr Glu Asp
 755 760 765
 Lys Thr Asp Trp Gly Lys Glu Ile Gly Trp Ile Tyr Gly Ser Val Thr
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 Glu Asp Ile Leu Thr Gly Phe Lys Met His Cys His Gly Trp Arg Ser
 785 790 795 800


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<210> 12
<211> 341
<212> PRT
<213> Oryza sativa

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Arg Ser Arg Arg Ser Pro Arg Arg Thr Pro Cys Cys Pro Tyr Ile Leu
 20          25          30

Ala Ala Gly Tyr Pro Ala Gly Lys Val Thr Cys Tyr Ile Ser Asp Asp
 35          40          45

Ala Gly Ala Glu Val Thr Arg Asn Ala Val Val Glu Ala Ala Arg Phe
 50          55          60

Ala Ala Leu Trp Val Ser Phe Cys Arg Lys His Gly Val Glu Pro Arg
 65          70          75          80

Asn Leu Glu Ala Tyr Phe Asn Ala Gly Glu Gly Gly Gly Gly Lys Ala
 85          90          95

Lys Val Val Ala Arg Gly Ser Tyr Arg Gly Met Ala Trp Pro Glu Leu
100          105          110

Val Arg Asp Arg Arg Arg Val Arg Arg Glu Tyr Glu Glu Met Arg Leu
115          120          125

Arg Ile Asp Ala Leu Gln Ala Ala Asp Ala Arg Arg Arg Arg Arg Gly
130          135          140

Ala Ala Asp Asp His Ala Gly Val Val Gln Val Leu Ile Asp Phe Ala
145          150          155          160

Gly Ser Val Pro Gln Leu Gly Val Ala Asn Gly Ser Lys Leu Ile Asp
165          170          175

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Val Ala Ser Val Asp Val Cys Leu Pro Ala Leu Val Tyr Val Cys Arg
180 185 190

Glu Lys Arg Arg Gly His Ala His His Arg Lys Ala Gly Ala Met Asn
195 200 205

Ala Pro Phe Ile Leu Asp Leu Asp Cys Asp Tyr Tyr Val Asn Asn Ser
210 215 220

Gln Ala Leu Arg Ala Gly Ile Cys Phe Met Ile Glu Arg Gly Gly Gly
225 230 235 240

Gly Ala Ala Glu Asp Ala Gly Ala Val Ala Phe Val Gln Phe Pro Gln
245 250 255

Arg Val Asp Gly Val Asp Pro Gly Asp Arg Tyr Ala Asn His Asn Arg
260 265 270

Val Leu Phe Asp Cys Thr Glu Leu Gly Leu Asp Gly Leu Gln Gly Pro
275 280 285

Ile Tyr Val Gly Thr Gly Cys Leu Phe Arg Arg Val Ala Leu Tyr Ser
290 295 300

Val Asp Leu Pro Arg Trp Arg Pro Arg Arg Ser Leu Gly Cys Arg Leu
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Leu Ser Gly Pro Arg
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<210> 13
<211> 3517
<212> DNA
<213> Glycine max

<400> 13

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<210> 14
<211> 1039
<212> PRT
<213> Glycine max

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<222> (201)
<223> xaa = any amino acid

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Leu Val Val Ile His Gly His Glu Glu Pro Lys Ala Leu Lys Asn Leu
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Asp Gly Gln Val Cys Glu Ile Cys Gly Asp Gly Val Gly Leu Thr Val
 35             40             45

Asp Gly Asp Leu Phe Val Ala Cys Asn Glu Cys Gly Phe Pro Val Cys

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Arg 65	Pro	Cys	Tyr	Glu	Tyr 70	Glu	Arg	Arg	Glu	Gly 75	Ser	His	Leu	Cys	Pro 80
Gln	Cys	Lys	Thr	Arg 85	Tyr	Lys	Arg	Leu	Lys 90	Gly	Ser	Pro	Arg	Val 95	Glu
Gly	Asp	Asp	Asp 100	Glu	Glu	Asp	Val	Asp 105	Asp	Ile	Glu	His	Glu 110	Phe	Asn
Ile	Asp	Glu 115	Gln	Lys	Asn	Lys	His 120	Gly	Gln	Val	Ala	Glu 125	Ala	Met	Leu
His	Gly 130	Arg	Met	Ser	Tyr	Gly 135	Arg	Gly	Pro	Glu	Asp 140	Asp	Asp	Asn	Ser
Gln 145	Phe	Pro	Thr	Pro	Val 150	Ile	Ala	Gly	Gly	Arg 155	Ser	Arg	Pro	Val	Ser 160
Gly	Glu	Phe	Pro	Ile 165	Ser	Ser	Asn	Ala	Tyr 170	Gly	Asp	Gln	Met	Leu 175	Ser
Ser	Ser	Leu	His 180	Lys	Arg	Val	His	Pro 185	Tyr	Pro	Val	Ser	Glu 190	Pro	Gly
Ser	Ala	Arg 195	Trp	Asp	Glu	Lys	Lys 200	Xaa	Asp	Gly	Trp	Lys 205	Asp	Arg	Met
Asp 210	Asp	Trp	Lys	Leu	Gln	Gln	Gly 215	Asn	Leu	Gly	Pro 220	Glu	Pro	Asp	Glu
Asp 225	Pro	Asp	Ala	Ala	Met 230	Leu	Asp	Glu	Ala	Arg 235	Gln	Pro	Leu	Ser	Arg 240
Lys	Val	Pro	Ile	Ala 245	Ser	Ser	Lys	Ile	Asn 250	Pro	Tyr	Arg	Met	Val 255	Ile
Val	Ala	Arg	Leu	Val 260	Ile	Leu	Ala	Phe 265	Phe	Leu	Arg	Tyr	Arg 270	Leu	Met
Asn	Pro	Val 275	His	Asp	Ala	Leu	Gly 280	Leu	Trp	Leu	Thr	Ser 285	Ile	Ile	Cys
Glu 290	Ile	Trp	Phe	Ala	Phe	Ser 295	Trp	Ile	Leu	Asp	Gln 300	Phe	Pro	Lys	Trp
Phe 305	Pro	Ile	Asp	Arg	Glu 310	Thr	Tyr	Leu	Asp	Arg 315	Leu	Ser	Ile	Arg	Tyr 320
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Ser	Thr	Val	Asp 340	Pro	Met	Lys	Glu 345	Pro	Pro	Leu	Val	Thr	Ala 350	Asn	Thr
Val	Leu	Ser 355	Ile	Leu	Ala	Met	Asp 360	Tyr	Pro	Val	Asp	Lys 365	Ile	Ser	Cys
Tyr	Ile	Ser	Asp	Asp	Gly	Ala	Ser	Met	Cys	Thr	Phe	Glu	Ser	Leu	Ser

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385					390					395					400
Ser	Ile	Glu	Pro	Arg	Ala	Pro	Glu	Met	Tyr	Phe	Ser	Glu	Lys	Ile	Asp
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Tyr	Leu	Lys	Asp	Lys	Val	Gln	Pro	Thr	Phe	Val	Lys	Glu	Arg	Arg	Ala
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Met	Lys	Arg	Glu	Tyr	Glu	Glu	Phe	Lys	Val	Arg	Ile	Asn	Ala	Leu	Val
		435					440					445			
Ala	Lys	Ala	Gln	Lys	Val	Pro	Gln	Gly	Gly	Trp	Ile	Met	Gln	Asp	Gly
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Thr	Pro	Trp	Pro	Gly	Asn	Asn	Thr	Lys	Asp	His	Pro	Gly	Met	Ile	Gln
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Val	Phe	Leu	Gly	Ser	Ser	Gly	Gly	Leu	Asp	Thr	Glu	Gly	Asn	Gln	Leu
				485					490					495	
Pro	Arg	Leu	Val	Tyr	Val	Ser	Arg	Glu	Lys	Arg	Pro	Gly	Phe	Gln	His
			500					505					510		
His	Lys	Lys	Ala	Gly	Ala	Met	Asn	Ala	Leu	Val	Arg	Val	Ser	Ala	Val
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	530					535					540				
Asn	Asn	Ser	Lys	Ala	Ala	Arg	Glu	Ala	Met	Cys	Phe	Leu	Met	Asp	Pro
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Gln	Thr	Gly	Lys	Lys	Val	Cys	Tyr	Val	Gln	Phe	Pro	Gln	Arg	Phe	Asp
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Gly	Ile	Asp	Thr	His	Asp	Arg	Tyr	Ala	Asn	Arg	Asn	Thr	Val	Phe	Phe
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Asp	Ile	Asn	Met	Lys	Gly	Leu	Asp	Gly	Ile	Gln	Gly	Pro	Val	Tyr	Val
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Cys	Phe	Gly	Ser	Arg	Lys	Lys	Tyr	Lys	Glu	Lys	Asn	Asp	Ala	Asn	Gly
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Ser	Gln	Met	Asn	Phe	Glu	Lys	Lys	Phe	Gly	Gln	Ser	Ser	Ile	Phe	Val
		675					680					685			
Thr	Ser	Thr	Leu	Met	Glu	Glu	Gly	Gly	Val	Pro	Pro	Ser	Ser	Ser	Pro

690					695					700					
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Asp	Lys	Thr	Glu	Trp	Gly	Leu	Glu	Leu	Gly	Trp	Ile	Tyr	Gly	Ser	Ile
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Pro	Ala	Val	Cys	Leu	Leu	Thr	Asp	Lys	Phe	Ile	Met	Pro	Pro	Ile	Ser
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Asn	Phe	Thr	Val	Thr	Ser	Lys	Ala	Thr	Asp	Asp	Glu	Glu	Phe	Gly	Glu
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Leu	Tyr	Thr	Phe	Lys	Trp	Thr	Thr	Leu	Leu	Ile	Pro	Pro	Thr	Thr	Ile
	930					935					940				
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945						950					955				960
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Gly	Arg	Gln	Asn	Arg	Thr	Pro	Thr	Ile	Val	Val	Ile	Trp	Ser	Val	Leu
		995					1000					1005			
Leu	Ala	Ser	Ile	Phe	Ser	Leu	Leu	Trp	Val	Arg	Ile	Asp	Pro	Phe	Val


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1025                               1030                               1035

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<211> 2125
<212> DNA
<213> Glycine max

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<211> 610
<212> PRT
<213> Glycine max

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Thr Pro Trp Pro Gly Asn Asn Pro Arg Asp His Pro Gly Met Ile Gln
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His	Lys	Lys	Ala	Gly	Ala	Met	Asn	Ala	Leu	Ile	Arg	Val	Ser	Ala	Val	65	70	75
Leu	Thr	Asn	Gly	Ala	Tyr	Leu	Leu	Asn	Val	Asp	Cys	Asp	His	Tyr	Phe	85	90	95
Asn	Asn	Ser	Lys	Ala	Leu	Lys	Glu	Ala	Met	Cys	Phe	Met	Met	Asp	Pro	100	105	110
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Asp	Ile	Asn	Met	Lys	Gly	Gln	Asp	Gly	Val	Gln	Gly	Pro	Val	Tyr	Val	145	150	155
Gly	Thr	Gly	Cys	Cys	Phe	Asn	Arg	Gln	Ala	Leu	Tyr	Gly	Tyr	Asp	Pro	165	170	175
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Met	Glu	Asp	Ile	Glu	Glu	Gly	Val	Glu	Gly	Tyr	Asp	Asp	Glu	Arg	Thr	225	230	235
Leu	Leu	Met	Ser	Gln	Lys	Ser	Leu	Glu	Lys	Arg	Phe	Gly	Gln	Ser	Pro	245	250	255
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Thr	Asn	Pro	Ala	Thr	Leu	Leu	Lys	Glu	Ala	Ile	His	Val	Ile	Ser	Cys	275	280	285
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Gly	Ser	Val	Thr	Glu	Asp	Ile	Leu	Thr	Gly	Phe	Lys	Met	His	Ala	Arg	305	310	315
Gly	Trp	Ile	Ser	Ile	Tyr	Cys	Met	Pro	Pro	Arg	Pro	Ala	Phe	Lys	Gly	325	330	335
Ser	Ala	Pro	Ile	Asn	Leu	Ser	Asp	Arg	Leu	Asn	Gln	Val	Leu	Arg	Trp	340	345	350

Ala Leu Gly Ser Ile Glu Ile Phe Leu Ser Arg His Cys Pro Leu Trp
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Tyr Gly Tyr Asn Gly Lys Leu Lys Pro Leu Met Arg Leu Ala Tyr Ile
370 375 380

Asn Thr Ile Val Tyr Pro Phe Thr Ser Ile Pro Leu Ile Ala Tyr Cys
385 390 395 400

Thr Leu Pro Ala Phe Cys Leu Leu Thr Asn Lys Phe Ile Ile Pro Glu
405 410 415

Ile Ser Asn Phe Ala Ser Met Trp Phe Ile Leu Leu Phe Val Ser Ile
420 425 430

Phe Thr Thr Ser Ile Leu Glu Leu Arg Trp Ser Gly Val Ser Ile Glu
435 440 445

Asp Trp Trp Arg Asn Glu Gln Phe Trp Val Ile Gly Gly Thr Ser Ala
450 455 460

His Leu Phe Ala Val Phe Gln Gly Leu Leu Lys Val Leu Ala Gly Ile
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Asp Thr Asn Phe Thr Val Thr Ser Lys Ala Ser Asp Glu Asp Gly Asp
485 490 495

Phe Ala Glu Leu Tyr Val Phe Lys Trp Thr Ser Leu Leu Ile Pro Pro
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Thr Thr Val Leu Ile Val Asn Leu Val Gly Ile Val Ala Gly Val Ser
515 520 525

Tyr Ala Ile Asn Ser Gly Tyr Gln Ser Trp Gly Pro Leu Phe Gly Lys
530 535 540

Leu Phe Phe Ala Ile Trp Val Ile Ala His Leu Tyr Pro Phe Leu Lys
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Gly Leu Leu Gly Arg Gln Asn Arg Thr Pro Thr Ile Val Ile Val Trp
565 570 575

Ser Val Leu Leu Ala Ser Ile Phe Ser Leu Leu Trp Val Arg Ile Asp
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Pro Phe Thr Ser Asp Ser Asn Lys Leu Thr Asn Gly Gln Cys Gly Ile
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Asn Cys
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<213> Glycine max

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aaaaaaaaaa						2890

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Pro Lys Trp Tyr Pro Ile Gln Arg Glu Thr Tyr Leu Asp Arg Leu Ser
 35 40 45
 Leu Arg Tyr Glu Lys Glu Gly Lys Pro Ser Glu Leu Ser Ser Val Asp
 50 55 60
 Val Phe Val Ser Thr Val Asp Pro Met Lys Glu Pro Pro Leu Ile Thr
 65 70 75 80
 Ala Asn Thr Val Leu Ser Ile Leu Ala Val Asp Tyr Pro Val Asp Lys
 85 90 95
 Val Ala Cys Tyr Val Ser Asp Asp Gly Ala Ala Met Leu Thr Phe Glu
 100 105 110
 Ala Leu Ser Glu Thr Ser Glu Phe Ala Arg Arg Trp Val Pro Phe Cys
 115 120 125
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 130 135 140
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 145 150 155 160
 Arg Arg Ala Met Lys Arg Asp Tyr Glu Glu Phe Lys Val Arg Ile Asn
 165 170 175
 Ser Leu Val Ala Thr Ala Gln Lys Val Pro Glu Asp Gly Trp Thr Met
 180 185 190
 Gln Asp Gly Thr Pro Trp Pro Gly Asn Asn Val Arg Asp His Pro Gly
 195 200 205
 Met Ile Gln Val Phe Leu Gly Gln Asp Gly Val Arg Asp Val Glu Gly
 210 215 220
 Asn Glu Leu Pro Arg Leu Val Tyr Val Ser Arg Glu Lys Arg Pro Gly
 225 230 235 240
 Phe Asp His His Lys Lys Ala Gly Ala Met Asn Ala Leu Val Arg Ala
 245 250 255
 Ser Ala Ile Ile Thr Asn Ala Pro Tyr Leu Leu Asn Val Asp Cys Asp
 260 265 270
 His Tyr Ile Asn Asn Ser Lys Ala Leu Arg Glu Ala Met Cys Phe Met
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 Met Asp Pro Gln Leu Gly Lys Lys Val Cys Tyr Val Gln Phe Pro Gln
 290 295 300
 Arg Phe Asp Gly Ile Asp Arg His Asp Arg Tyr Ser Asn Arg Asn Val
 305 310 315 320
 Val Phe Phe Asp Ile Asn Met Lys Gly Leu Asp Gly Ile Gln Gly Pro
 325 330 335
 Ile Tyr Val Gly Thr Gly Cys Val Phe Arg Arg Tyr Ala Leu Tyr Gly
 340 345 350

Tyr Asp Ala Pro Ala Lys Lys Lys Pro Pro Ser Lys Thr Cys Asn Cys
355 360 365
Trp Pro Lys Trp Cys Cys Leu Cys Cys Gly Ser Arg Lys Lys Lys Asn
370 375 380
Ala Asn Ser Lys Lys Glu Lys Lys Arg Lys Val Lys His Ser Glu Ala
385 390 395 400
Ser Lys Gln Ile His Ala Leu Glu Asn Ile Glu Ala Gly Asn Glu Gly
405 410 415
Thr Asn Asn Glu Lys Thr Ser Asn Leu Thr Gln Thr Lys Leu Glu Lys
420 425 430
Arg Phe Gly Gln Ser Pro Val Phe Val Ala Ser Thr Leu Leu Asp Asp
435 440 445
Gly Gly Val Pro His Gly Val Ser Pro Ala Ser Leu Leu Lys Glu Ala
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Ile Gln Val Ile Ser Cys Gly Tyr Glu Asp Lys Thr Glu Trp Gly Lys
465 470 475 480
Glu Val Gly Trp Ile Tyr Gly Ser Val Thr Glu Asp Ile Leu Thr Gly
485 490 495
Phe Lys Met His Cys His Gly Trp Arg Ser Val Tyr Cys Ile Pro Lys
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Arg Pro Ala Phe Lys Gly Ser Ala Pro Ile Asn Leu Ser Asp Arg Leu
515 520 525
His Gln Val Leu Arg Trp Ala Leu Gly Ser Val Glu Ile Phe Phe Ser
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Arg His Cys Pro Ile Trp Tyr Gly Tyr Gly Gly Gly Leu Lys Leu Leu
545 550 555 560
Glu Arg Phe Ser Tyr Ile Asn Ser Val Val Tyr Pro Trp Thr Ser Leu
565 570 575
Pro Leu Leu Val Tyr Cys Thr Leu Pro Ala Ile Cys Leu Leu Thr Gly
580 585 590
Lys Phe Ile Val Pro Glu Ile Ser Asn Tyr Ala Ser Leu Val Phe Met
595 600 605
Ala Leu Phe Ile Ser Ile Ala Ala Thr Gly Ile Leu Glu Met Gln Trp
610 615 620
Gly Gly Val Ser Ile Asp Asp Trp Trp Arg Asn Glu Gln Phe Trp Val
625 630 635 640
Ile Gly Gly Val Ser Ser His Leu Phe Ala Leu Phe Gln Gly Leu Leu
645 650 655
Lys Val Leu Ala Gly Val Asn Thr Asn Phe Thr Val Thr Ser Lys Ala
660 665 670

Ala Asp Asp Gly Glu Phe Ser Glu Leu Tyr Ile Phe Lys Trp Thr Ser
675 680 685

Leu Leu Ile Pro Pro Met Thr Leu Leu Ile Met Asn Ile Val Gly Val
690 695 700

Val Val Gly Ile Ser Asp Ala Ile Asn Asn Gly Tyr Asp Ser Trp Gly
705 710 715 720

Pro Leu Phe Gly Arg Leu Phe Phe Ala Leu Trp Val Ile Leu His Leu
725 730 735

Tyr Pro Phe Leu Lys Gly Leu Leu Gly Lys Gln Asp Arg Met Pro Thr
740 745 750

Ile Ile Leu Val Trp Ser Ile Leu Leu Ala Ser Ile Leu Thr Leu Met
755 760 765

Trp Val Arg Ile Asn Pro Phe Val Ser Arg Asp Gly Pro Val Leu Glu
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Ile Cys Gly Leu Asn Cys Asp Glu Ser
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<213> Triticum aestivum

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<222> (271)
<223> n = a, c g or t

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actgtctttt ttgatattaa cttgaggggc cttgacggca ttcaaggacc agtttatgtg 180
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aa 1742

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<213> Triticum aestivum

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Tyr Ala Asn Arg Asn Thr Val Phe Phe Asp Ile Asn Leu Arg Gly Leu
      35             40             45

Asp Gly Ile Gln Gly Pro Val Tyr Val Gly Thr Gly Cys Val Phe Asn
      50             55             60

Arg Thr Ala Ile Tyr Gly Tyr Glu Pro Pro Ile Lys Ala Lys Lys Pro
      65             70             75             80

Gly Phe Leu Ala Ser Leu Cys Xaa Gly Lys Lys Lys Ala Ser Lys Ser
      85             90             95

Lys Lys Arg Ser Ser Asp Lys Lys Lys Ser Asn Lys His Val Asp Ser
      100            105            110

Ser Val Pro Val Phe Asn Leu Glu Asp Ile Glu Glu Gly Val Glu Gly
      115            120            125

Ala Gly Phe Asp Asp Glu Lys Ser Val Leu Met Ser Gln Met Ser Leu
      130            135            140

Glu Lys Arg Phe Gly Gln Ser Ala Ala Phe Val Ala Ser Thr Leu Met
      145            150            155            160

Glu Tyr Gly Gly Val Pro Gln Ser Ser Thr Pro Glu Ser Leu Leu Lys
      165            170            175

Glu Ala Ile His Val Ile Ser Cys Gly Tyr Glu Asp Lys Ser Glu Trp
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Gly Thr Glu Ile Gly Trp Ile Tyr Gly Ser Val Thr Glu Asp Ile Leu
      195            200            205

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Thr Gly Phe Lys Met His Ala Arg Gly Trp Arg Ser Ile Tyr Cys Met
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 Pro Lys Arg Pro Ala Phe Lys Gly Ser Ala Pro Ile Asn Leu Ser Asp
 225 230 235 240
 Arg Leu Asn Gln Val Leu Arg Trp Ala Leu Gly Ser Val Glu Ile Leu
 245 250 255
 Phe Ser Arg His Cys Pro Leu Trp Tyr Gly Tyr Gly Gly Arg Leu Lys
 260 265 270
 Phe Leu Glu Arg Phe Ala Tyr Ile Asn Thr Thr Ile Tyr Pro Leu Thr
 275 280 285
 Ser Leu Pro Leu Leu Val Tyr Cys Ile Leu Pro Ala Ile Cys Leu Leu
 290 295 300
 Thr Gly Lys Phe Ile Met Pro Glu Ile Ser Asn Leu Ala Ser Ile Trp
 305 310 315 320
 Phe Ile Ala Leu Phe Leu Ser Ile Phe Ala Thr Gly Ile Leu Glu Met
 325 330 335
 Arg Trp Ser Gly Val Gly Ile Asp Glu Trp Trp Arg Asn Glu Gln Phe
 340 345 350
 Trp Val Ile Gly Gly Ile Ser Ala His Leu Phe Ala Val Phe Gln Gly
 355 360 365
 Leu Leu Lys Val Leu Ala Gly Ile Asp Thr Asn Phe Thr Val Thr Ser
 370 375 380
 Lys Ala Asn Asp Glu Glu Gly Asp Phe Ala Glu Leu Tyr Met Phe Lys
 385 390 395 400
 Trp Thr Thr Leu Leu Ile Pro Pro Thr Thr Ile Leu Ile Ile Asn Met
 405 410 415
 Val Gly Val Val Ala Gly Thr Ser Tyr Ala Ile Asn Ser Gly Tyr Gln
 420 425 430
 Ser Trp Gly Pro Leu Phe Gly Lys Leu Phe Phe Ala Phe Trp Val Ile
 435 440 445
 Val His Leu Tyr Pro Phe Leu Lys Gly Leu Met Gly Arg Gln Asn Arg
 450 455 460
 Thr Pro Thr Ile Val Ile Val Trp Ala Val Leu Leu Ala Ser Ile Phe
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 Pro Asn Ile Gln Thr Cys Gly Ile Asn Cys
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 <211> 1029

<212> DNA
 <213> Triticum aestivum

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 ggtcacagcg aacactgtcc tttccatcct ttctgtggat tatccggttg agaaggctctc 720
 ctgctatgtt tctgatgatg gtgctgcaat gcttacgttt gaagcattgt ctgaaacatc 780
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 35 40 45
 Arg Ser Met Asp Pro Ser Lys Asp Leu Ala Ala Tyr Gly Tyr Gly Ser
 50 55 60
 Val Ala Trp Lys Glu Arg Met Glu Gly Trp Lys Gln Lys Gln Glu Arg
 65 70 75 80
 Leu Gln His Val Arg Ser Glu Gly Gly Gly Asp Trp Asp Gly Asp Asp
 85 90 95
 Ala Asp Leu Pro Leu Met Asp Glu Ala Arg Gln Pro Leu Ser Arg Lys
 100 105 110
 Val Pro Ile Ser Ser Ser Arg Ile Asn Pro Tyr Arg Met Ile Ile Val
 115 120 125
 Ile Arg Leu Val Val Leu Gly Phe Phe Phe His Tyr Arg Val Met His
 130 135 140
 Pro Ala Lys Asp Ala Phe Ala Leu Trp Leu Ile Ser Val Ile Cys Glu
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 Ile Trp Phe Ala Met Ser Cys Ile Leu Asp Gln Phe Pro Lys Trp Phe

	165		170		175
Pro Ile Glu Arg Glu Thr Tyr Leu Asp Arg Leu Ser Leu Arg Phe Asp	180		185		190
Lys Glu Gly Gln Pro Ser Gln Leu Ala Pro Ile Asp Phe Phe Val Ser	195		200		205
Thr Val Asp Pro Thr Lys Glu Pro Pro Leu Val Thr Ala Asn Thr Val	210		215		220
Leu Ser Ile Leu Ser Val Asp Tyr Pro Val Glu Lys Val Ser Cys Tyr	225		230		235
Val Ser Asp Asp Gly Ala Ala Met Leu Thr Phe Glu Ala Leu Ser Glu	245		250		255
Thr Ser Glu Phe Ala Lys Lys Trp Val Pro Phe Ser Lys Lys Phe Asn	260		265		270
Ile Glu Pro Arg Ala Pro Glu Trp Tyr Phe Gln Gln Lys Ile Asp Tyr	275		280		285
Leu Lys Asp Lys Val Ala Ala Ser Phe Val Arg Glu Arg Arg Ala Met	290		295		300
Lys Arg Glu Tyr Glu Glu Phe Lys Val Arg Ile Asn Ala Leu Val Ala	305		310		315
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Ala Glu Thr Gly Asp Val Phe Val Ala Cys Asn Glu Cys Ala Phe Pro
50 55 60
Val Cys Arg Pro Cys Tyr Glu Tyr Glu Arg Lys Asp Gly Thr Gln Cys
65 70 75 80
Cys Pro Gln Cys Lys Thr Arg Phe Arg Arg His Arg Gly Ser Pro Arg
85 90 95
Val Glu Gly Asp Glu Asp Glu Asp Asp Val Asp Asp Ile Glu Asn Glu

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Phe	Asn	Tyr	Ala	Gln	Gly	Ala	Asn	Lys	Ala	Arg	His	Gln	Arg	His	Gly
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Glu	Glu	Phe	Ser	Ser	Ser	Ser	Arg	His	Glu	Ser	Gln	Pro	Ile	Pro	Leu
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Leu	Thr	His	Gly	His	Thr	Val	Ser	Gly	Glu	Ile	Arg	Thr	Pro	Asp	Thr
145					150					155					160
Gln	Ser	Val	Arg	Thr	Thr	Ser	Gly	Pro	Leu	Gly	Pro	Ser	Asp	Arg	Asn
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Ala	Ile	Ser	Ser	Pro	Tyr	Ile	Asp	Pro	Arg	Gln	Pro	Val	Pro	Val	Arg
			180					185					190		
Ile	Val	Asp	Pro	Ser	Lys	Asp	Leu	Asn	Ser	Tyr	Gly	Leu	Gly	Asn	Val
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Asp	Trp	Lys	Glu	Arg	Val	Glu	Gly	Trp	Lys	Leu	Lys	Gln	Glu	Lys	Asn
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Met	Leu	Gln	Met	Thr	Gly	Lys	Tyr	His	Glu	Gly	Lys	Gly	Gly	Glu	Ile
225					230					235					240
Glu	Gly	Thr	Gly	Ser	Asn	Gly	Glu	Glu	Leu	Gln	Met	Ala	Asp	Asp	Thr
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Arg	Leu	Pro	Met	Ser	Arg	Val	Val	Pro	Ile	Pro	Ser	Ser	Arg	Leu	Thr
			260					265					270		
Pro	Tyr	Arg	Val	Val	Ile	Ile	Leu	Arg	Leu	Ile	Ile	Leu	Cys	Phe	Phe
		275					280					285			
Leu	Gln	Tyr	Arg	Thr	Thr	His	Pro	Val	Lys	Asn	Ala	Tyr	Pro	Leu	Trp
	290					295					300				
Leu	Thr	Ser	Val	Ile	Cys	Glu	Ile	Trp	Phe	Ala	Phe	Ser	Trp	Leu	Leu
305					310					315					320
Asp	Gln	Phe	Pro	Lys	Trp	Tyr	Pro	Ile	Asn	Arg	Glu	Thr	Tyr	Leu	Asp
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Arg	Leu	Ala	Ile	Arg	Tyr	Asp	Arg	Asp	Gly	Glu	Pro	Ser	Gln	Leu	Val
			340					345					350		
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		355					360					365			
Leu	Val	Thr	Ala	Asn	Thr	Val	Leu	Ser	Ile	Leu	Ser	Val	Asp	Tyr	Pro
	370					375					380				
Val	Asp	Lys	Val	Ala	Cys	Tyr	Val	Ser	Asp	Asp	Gly	Ser	Ala	Met	Leu
385					390					395					400
Thr	Phe	Glu	Ser	Leu	Ser	Glu	Thr	Ala	Glu	Phe	Ala	Lys	Lys	Trp	Val
				405					410					415	
Pro	Phe	Cys	Lys	Lys	Phe	Asn	Ile	Glu	Pro	Arg	Ala	Pro	Glu	Phe	Tyr

420							425					430			
Phe	Ala	Gln	Lys	Ile	Asp	Tyr	Leu	Lys	Asp	Lys	Ile	Gln	Pro	Ser	Phe
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Val	Lys	Glu	Arg	Arg	Ala	Met	Lys	Arg	Glu	Tyr	Glu	Glu	Phe	Lys	Val
		450				455						460			
Arg	Ile	Asn	Ala	Leu	Val	Ala	Lys	Ala	Gln	Lys	Ile	Pro	Glu	Glu	Gly
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Trp	Thr	Met	Gln	Asp	Gly	Thr	Pro	Trp	Pro	Gly	Asn	Asn	Thr	Arg	Asp
				485						490				495	
His	Pro	Gly	Met	Ile	Gln	Val	Phe	Leu	Gly	His	Ser	Gly	Gly	Leu	Asp
		500						505				510			
Thr	Asp	Gly	Asn	Glu	Leu	Pro	Arg	Leu	Ile	Tyr	Val	Ser	Arg	Glu	Lys
		515						520				525			
Arg	Pro	Gly	Phe	Gln	His	His	Lys	Lys	Ala	Gly	Ala	Met	Asn	Ala	Leu
		530				535						540			
Ile	Arg	Val	Ser	Ala	Val	Leu	Thr	Asn	Gly	Ala	Tyr	Leu	Leu	Asn	Val
		545				550				555				560	
Asp	Cys	Asp	His	Tyr	Phe	Asn	Asn	Ser	Lys	Ala	Ile	Lys	Glu	Ala	Met
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Cys	Phe	Met	Met	Asp	Pro	Ala	Ile	Gly	Lys	Lys	Cys	Cys	Tyr	Val	Gln
		580						585				590			
Phe	Pro	Gln	Arg	Phe	Asp	Gly	Ile	Asp	Leu	His	Asp	Arg	Tyr	Ala	Asn
		595				600						605			
Arg	Asn	Ile	Val	Phe	Phe	Asp	Ile	Asn	Met	Lys	Gly	Leu	Asp	Gly	Ile
		610				615						620			
Gln	Gly	Pro	Val	Tyr	Val	Gly	Thr	Gly	Cys	Cys	Phe	Asn	Arg	Gln	Ala
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Leu	Tyr	Gly	Tyr	Asp	Pro	Val	Leu	Thr	Glu	Glu	Asp	Leu	Glu	Pro	Asn
				645						650				655	
Ile	Ile	Val	Lys	Ser	Cys	Cys	Gly	Ser	Arg	Lys	Lys	Gly	Lys	Ser	Ser
		660						665				670			
Lys	Lys	Tyr	Asn	Tyr	Glu	Lys	Arg	Arg	Gly	Ile	Asn	Arg	Ser	Asp	Ser
		675						680				685			
Asn	Ala	Pro	Leu	Phe	Asn	Met	Glu	Asp	Ile	Asp	Glu	Gly	Phe	Glu	Gly
		690				695						700			
Tyr	Asp	Asp	Glu	Arg	Ser	Ile	Leu	Met	Ser	Gln	Arg	Ser	Val	Glu	Lys
		705				710				715				720	
Arg	Phe	Gly	Gln	Ser	Pro	Val	Phe	Ile	Ala	Ala	Thr	Phe	Met	Glu	Gln
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Gly	Gly	Ile	Pro	Pro	Thr	Thr	Asn	Pro	Ala	Thr	Leu	Leu	Lys	Glu	Ala

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Ile	His	Val	Ile	Ser	Cys	Gly	Tyr	Glu	Asp	Lys	Thr	Glu	Trp	Gly	Lys
		755					760					765			
Glu	Ile	Gly	Trp	Ile	Tyr	Gly	Ser	Val	Thr	Glu	Asp	Ile	Leu	Thr	Gly
	770					775					780				
Phe	Lys	Met	His	Ala	Arg	Gly	Trp	Ile	Ser	Ile	Tyr	Cys	Asn	Pro	Pro
785						790					795				800
Arg	Pro	Ala	Phe	Lys	Gly	Ser	Ala	Pro	Ile	Asn	Leu	Ser	Asp	Arg	Leu
				805					810					815	
Asn	Gln	Val	Leu	Arg	Trp	Ala	Leu	Gly	Ser	Ile	Glu	Ile	Leu	Leu	Ser
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Arg	His	Cys	Pro	Ile	Trp	Tyr	Gly	Tyr	His	Gly	Arg	Leu	Arg	Leu	Leu
		835					840					845			
Glu	Arg	Ile	Ala	Tyr	Ile	Asn	Thr	Ile	Val	Tyr	Pro	Ile	Thr	Ser	Ile
	850					855					860				
Pro	Leu	Ile	Ala	Tyr	Cys	Ile	Leu	Pro	Ala	Phe	Cys	Leu	Ile	Thr	Asp
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Arg	Phe	Ile	Ile	Pro	Glu	Ile	Ser	Asn	Tyr	Ala	Ser	Ile	Trp	Phe	Ile
				885					890					895	
Leu	Leu	Phe	Ile	Ser	Ile	Ala	Val	Thr	Gly	Ile	Leu	Glu	Leu	Arg	Trp
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Ser	Gly	Val	Ser	Ile	Glu	Asp	Trp	Trp	Arg	Asn	Glu	Gln	Phe	Trp	Val
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Ile	Gly	Gly	Thr	Ser	Ala	His	Leu	Phe	Ala	Val	Phe	Gln	Gly	Leu	Leu
	930					935					940				
Lys	Val	Leu	Ala	Gly	Ile	Asp	Thr	Asn	Phe	Thr	Val	Thr	Ser	Lys	Ala
945						950					955				960
Thr	Asp	Glu	Asp	Gly	Asp	Phe	Ala	Glu	Leu	Tyr	Ile	Phe	Lys	Trp	Thr
				965					970					975	
Ala	Leu	Leu	Ile	Pro	Pro	Thr	Thr	Val	Leu	Leu	Val	Asn	Leu	Ile	Gly
			980					985					990		
Ile	Val	Ala	Gly	Val	Ser	Tyr	Ala	Val	Asn	Ser	Gly	Tyr	Gln	Ser	Trp
		995					1000					1005			
Gly	Pro	Leu	Phe	Gly	Lys	Leu	Phe	Phe	Ala	Leu	Trp	Val	Ile	Ala	His
	1010					1015					1020				
Leu	Tyr	Pro	Phe	Leu	Lys	Gly	Leu	Leu	Gly	Arg	Gln	Asn	Arg	Thr	Pro
1025						1030					1035				1040
Thr	Ile	Val	Ile	Val	Trp	Ser	Val	Leu	Leu	Ala	Ser	Ile	Phe	Ser	Leu
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Leu	Trp	Val	Arg	Ile	Asn	Pro	Phe	Val	Asp	Ala	Asn	Pro	Asn	Ala	Asn

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Glu Leu Ser Gly Gln Thr Cys Gln Ile Cys Gly Asp Glu Ile Glu Leu		
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Thr Val Ser Ser Glu Leu Phe Val Ala Cys Asn Glu Cys Ala Phe Pro		
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Val Cys Arg Pro Cys Tyr Glu Tyr Glu Arg Arg Glu Gly Asn Gln Ala		
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Cys Pro Gln Cys Lys Thr Arg Tyr Lys Arg Ile Lys Gly Ser Pro Arg		
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Val Asp Gly Asp Asp Glu Glu Glu Glu Asp Ile Asp Asp Leu Glu Tyr		
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Glu Phe Asp His Gly Met Asp Pro Glu His Ala Ala Glu Ala Ala Leu		
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Ser Ser Arg Leu Asn Thr Gly Arg Gly Gly Leu Asp Ser Ala Pro Pro		
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Gly Ser Gln Ile Pro Leu Leu Thr Tyr Cys Asp Glu Asp Ala Asp Met		
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Tyr Ser Asp Arg His Ala Leu Ile Val Pro Pro Ser Thr Gly Tyr Gly		
	165	170 175
Asn Arg Val Tyr Pro Ala Pro Phe Thr Asp Ser Ser Ala Pro Pro Gln		
	180	185 190
Ala Arg Ser Met Val Pro Gln Lys Asp Ile Ala Glu Tyr Gly Tyr Gly		
	195	200 205
Ser Val Ala Trp Lys Asp Arg Met Glu Val Trp Lys Arg Arg Gln Gly		
	210	215 220
Glu Lys Leu Gln Val Ile Lys His Glu Gly Gly Asn Asn Gly Arg Gly		
	225	230 235 240
Ser Asn Asp Asp Asp Glu Leu Asp Asp Pro Asp Met Pro Met Met Asp		
	245	250 255
Glu Gly Arg Gln Pro Leu Ser Arg Lys Leu Pro Ile Arg Ser Ser Arg		

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Ile	Asn	Pro	Tyr	Arg	Met	Leu	Ile	Leu	Cys	Arg	Leu	Ala	Ile	Leu	Gly		
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Leu	Phe	Phe	His	Tyr	Arg	Ile	Leu	His	Pro	Val	Asn	Asp	Ala	Tyr	Gly		
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Leu	Trp	Leu	Thr	Ser	Val	Ile	Cys	Glu	Ile	Trp	Phe	Ala	Val	Ser	Trp		
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Ile	Leu	Asp	Gln	Phe	Pro	Lys	Trp	Tyr	Pro	Ile	Glu	Arg	Glu	Thr	Tyr		
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Leu	Ala	Pro	Val	Asp	Val	Phe	Val	Ser	Thr	Val	Asp	Pro	Leu	Lys	Glu		
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Pro	Pro	Leu	Ile	Thr	Ala	Asn	Thr	Val	Leu	Ser	Ile	Leu	Ala	Val	Asp		
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Tyr	Pro	Val	Asp	Lys	Val	Ala	Cys	Tyr	Val	Ser	Asp	Asp	Gly	Ala	Ala		
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Met	Leu	Thr	Phe	Glu	Ala	Leu	Ser	Asp	Thr	Ala	Glu	Phe	Ala	Arg	Lys		
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Trp	Val	Pro	Phe	Cys	Lys	Lys	Phe	Asn	Ile	Glu	Pro	Arg	Ala	Pro	Glu		
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Trp	Tyr	Phe	Ser	Gln	Lys	Met	Asp	Tyr	Leu	Lys	Asn	Lys	Val	His	Pro		
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Ala	Phe	Val	Arg	Glu	Arg	Arg	Ala	Met	Lys	Arg	Asp	Tyr	Glu	Glu	Phe		
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Arg	Asp	His	Pro	Gly	Met	Ile	Gln	Val	Phe	Leu	Gly	His	Ser	Gly	Val		
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Ser	Leu	Ile	Arg	Val	Ser	Ala	Val	Leu	Ser	Asn	Ala	Pro	Tyr	Leu	Leu		
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Ser	Asn	Arg	Asn	Val	Val	Phe	Phe	Asp	Ile	Asn	Met	Lys	Gly	Leu	Asp															
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Lys	Thr	Cys	Asn	Cys	Trp	Pro	Lys	Trp	Cys	Cys	Leu	Cys	Cys	Gly	Leu															
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Glu	Thr	Ser	Lys	Gln	Ile	His	Ala	Leu	Glu	Asn	Val	Asp	Glu	Gly	Val															
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Lys	Leu	Glu	Lys	Lys	Phe	Gly	Gln	Ser	Pro	Val	Phe	Val	Ala	Ser	Ala															
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Val	Leu	Gln	Asn	Gly	Gly	Val	Pro	Arg	Asn	Ala	Ser	Pro	Ala	Cys	Leu															
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Cys	Met	Pro	Lys	Arg	Ala	Ala	Phe	Lys	Gly	Ser	Ala	Pro	Ile	Asn	Leu															
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Ser	Asp	Arg	Leu	His	Gln	Val	Leu	Arg	Trp	Ala	Leu	Gly	Ser	Val	Glu															
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Leu	Lys	Trp	Leu	Glu	Arg	Phe	Ser	Tyr	Ile	Asn	Ser	Val	Val	Tyr	Pro															
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Gln Gly	Leu Leu	Lys Val	Leu Ala	Gly Val	Asn Thr	Asn Phe	Thr Val												
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Thr Ser	Lys Ala	Ala Asp	Asp Gly	Ala Phe	Ser Glu	Leu Tyr	Ile Phe												
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Lys Trp	Thr Thr	Leu Leu	Ile Pro	Pro Thr	Thr Thr	Leu Leu	Ile Ile	Asn											
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Ile Ile	Gly Val	Ile Val	Gly Val	Ser Asp	Ala Ile	Ser Asn	Gly Tyr												
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Asp Ser	Trp Gly	Pro Leu	Phe Gly	Arg Leu	Phe Phe	Ala Leu	Trp Val												
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Ile Val	His Leu	Tyr Pro	Phe Leu	Lys Gly	Met Leu	Gly Lys	Gln Asp												
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Lys Met	Pro Thr	Ile Ile	Val Val	Trp Ser	Ile Leu	Leu Ala	Ser Ile												
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Leu Thr	Leu Leu	Trp Val	Arg Val	Asn Pro	Phe Val	Ala Lys	Gly Gly												
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His	Leu	Met	Phe	Glu	Met	Asn	Phe	Glu	Lys	Thr	Phe	Gly	Gln	Ser	Ser
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Ile	Phe	Val	Thr	Ser	Thr	Leu	Met	Glu	Glu	Gly	Gly	Val	Pro	Pro	Ser
		675					680					685			
Ser	Ser	Pro	Ala	Val	Leu	Leu	Lys	Glu	Ala	Ile	His	Val	Ile	Ser	Cys
	690					695					700				
Gly	Tyr	Glu	Asp	Lys	Thr	Glu	Trp	Gly	Thr	Glu	Leu	Gly	Trp	Ile	Tyr
705					710					715					720
Gly	Ser	Ile	Thr	Glu	Asp	Ile	Leu	Thr	Gly	Phe	Lys	Met	His	Cys	Arg
				725					730					735	
Gly	Trp	Arg	Ser	Ile	Tyr	Cys	Met	Pro	Lys	Arg	Pro	Ala	Phe	Lys	Gly
			740					745					750		
Ser	Ala	Pro	Ile	Asn	Leu	Ser	Asp	Arg	Leu	Asn	Gln	Val	Leu	Arg	Trp
		755					760					765			
Ala	Leu	Gly	Ser	Val	Glu	Ile	Phe	Phe	Ser	Arg	His	Ser	Pro	Leu	Trp
	770					775					780				
Tyr	Gly	Tyr	Lys	Gly	Gly	Lys	Leu	Lys	Trp	Leu	Glu	Arg	Phe	Ala	Tyr

785		790		795		800
Ala Asn Thr Thr	Ile Tyr Pro Phe Thr	Ser Ile Pro Leu Leu	Ala Tyr			
	805	810	815			
Cys Ile Leu Pro	Ala Ile Cys Leu Leu	Thr Asp Lys Phe	Ile Met Pro			
	820	825	830			
Pro Ile Ser Thr	Phe Ala Ser Leu Phe	Phe Ile Ser Leu	Phe Met Ser			
	835	840	845			
Ile Ile Val Thr	Gly Ile Leu Glu Leu	Arg Trp Ser Gly	Val Ser Ile			
	850	855	860			
Glu Glu Trp Trp	Arg Asn Glu Gln Phe	Trp Val Ile Gly	Gly Ile Ser			
	865	870	875	880		
Ala His Leu Phe	Ala Val Val Gln Gly	Leu Leu Lys Ile	Leu Ala Gly			
	885	890	895			
Ile Asp Thr Asn	Phe Thr Val Thr	Ser Lys Ala Thr	Asp Asp Asp			
	900	905	910			
Phe Gly Glu Leu	Tyr Ala Phe Lys	Trp Thr Thr Leu	Leu Ile Pro Pro			
	915	920	925			
Thr Thr Val Leu	Ile Ile Asn Ile	Val Gly Val Val	Ala Gly Ile Ser			
	930	935	940			
Asp Ala Ile Asn	Asn Gly Tyr Gln Ser	Trp Gly Pro Leu	Phe Gly Lys			
	945	950	955	960		
Leu Phe Phe Ser	Phe Trp Val Ile	Val His Leu Tyr	Pro Phe Leu	Lys		
	965	970	975			
Gly Leu Met Gly	Arg Gln Asn Arg	Thr Pro Thr Ile	Val Val Ile Trp			
	980	985	990			
Ser Val Leu Leu	Ala Ser Ile Phe	Ser Leu Leu Trp	Val Arg Ile Asp			
	995	1000	1005			
Pro Phe Val Leu	Lys Thr Lys Gly	Pro Asp Thr Ser	Lys Cys Gly Ile			
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Ala Met Leu Thr	Phe Glu Ala Leu	Ser Glu Thr Ser	Glu Phe Ala Arg			
	20	25	30			
Lys Trp Val Pro Phe Cys Lys Lys Tyr Asn Ile Glu Pro Arg Ala Pro						

35					40					45					
Glu	Trp	Tyr	Phe	Ala	Gln	Lys	Ile	Asp	Tyr	Leu	Lys	Asp	Lys	Val	Gln
50						55					60				
Thr	Ser	Phe	Val	Lys	Glu	Arg	Arg	Ala	Met	Lys	Arg	Glu	Tyr	Glu	Glu
65					70					75					80
Phe	Lys	Val	Arg	Val	Asn	Gly	Leu	Val	Ala	Lys	Ala	Gln	Lys	Val	Pro
				85					90					95	
Glu	Glu	Gly	Trp	Ile	Met	Gln	Asp	Gly	Thr	Pro	Trp	Pro	Gly	Asn	Asn
			100					105					110		
Thr	Arg	Asp	His	Pro	Gly	Met	Ile	Gln	Val	Phe	Leu	Gly	Gln	Ser	Gly
		115					120					125			
Gly	Leu	Asp	Ala	Glu	Gly	Asn	Glu	Leu	Pro	Arg	Leu	Val	Tyr	Val	Ser
	130					135					140				
Arg	Glu	Lys	Arg	Pro	Gly	Phe	Gln	His	His	Lys	Lys	Ala	Gly	Ala	Met
145					150					155					160
Asn	Ala	Leu	Val	Arg	Val	Ser	Ala	Val	Leu	Thr	Asn	Gly	Ala	Phe	Leu
				165					170					175	
Leu	Asn	Leu	Asp	Cys	Asp	His	Tyr	Ile	Asn	Asn	Ser	Lys	Ala	Leu	Arg
			180					185					190		
Glu	Ala	Met	Cys	Phe	Leu	Met	Asp	Pro	Asn	Leu	Gly	Lys	Gln	Val	Cys
		195					200					205			
Tyr	Val	Gln	Phe	Pro	Gln	Arg	Phe	Asp	Gly	Ile	Asp	Arg	Asn	Asp	Arg
	210					215					220				
Tyr	Ala	Asn	Arg	Asn	Thr	Val	Phe	Phe	Asp	Ile	Asn	Leu	Arg	Gly	Leu
225					230					235					240
Asp	Gly	Ile	Gln	Gly	Pro	Val	Tyr	Val	Gly	Thr	Gly	Cys	Val	Phe	Asn
				245					250					255	
Arg	Thr	Ala	Leu	Tyr	Gly	Tyr	Glu	Pro	Pro	Leu	Lys	Pro	Lys	His	Arg
			260					265					270		
Lys	Thr	Gly	Ile	Leu	Ser	Ser	Leu	Cys	Gly	Gly	Ser	Arg	Lys	Lys	Ser
		275					280					285			
Ser	Lys	Ser	Ser	Lys	Lys	Gly	Ser	Asp	Lys	Lys	Lys	Ser	Gly	Lys	His
	290					295					300				
Val	Asp	Ser	Thr	Val	Pro	Val	Phe	Asn	Leu	Glu	Asp	Ile	Glu	Glu	Gly
305					310					315					320
Val	Glu	Gly	Ala	Gly	Phe	Asp	Asp	Glu	Lys	Ser	Leu	Leu	Met	Ser	Gln
				325					330					335	
Met	Ser	Leu	Glu	Lys	Arg	Phe	Gly	Gln	Ser	Ala	Val	Phe	Val	Ala	Ser
			340					345					350		
Thr	Leu	Met	Glu	Asn	Gly	Gly	Val	Pro	Gln	Ser	Ala	Thr	Pro	Glu	Thr

355					360					365					
Leu	Leu	Lys	Glu	Ala	Ile	His	Val	Ile	Ser	Cys	Gly	Tyr	Glu	Asp	Lys
370						375					380				
Thr	Asp	Trp	Gly	Ser	Glu	Ile	Gly	Trp	Ile	Tyr	Gly	Ser	Val	Thr	Glu
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Asp	Ile	Leu	Thr	Gly	Phe	Lys	Met	His	Ala	Arg	Gly	Trp	Arg	Ser	Ile
				405					410					415	
Tyr	Cys	Met	Pro	Lys	Arg	Pro	Ala	Phe	Lys	Gly	Ser	Ala	Pro	Ile	Asn
			420					425					430		
Leu	Ser	Asp	Arg	Leu	Asn	Gln	Val	Leu	Arg	Trp	Ala	Leu	Gly	Ser	Val
		435					440					445			
Glu	Ile	Leu	Phe	Ser	Arg	His	Cys	Pro	Ile	Trp	Tyr	Gly	Tyr	Ser	Gly
	450					455					460				
Arg	Leu	Lys	Trp	Leu	Glu	Arg	Phe	Ala	Tyr	Val	Asn	Thr	Thr	Ile	Tyr
465					470					475					480
Pro	Val	Thr	Ala	Ile	Pro	Leu	Leu	Met	Tyr	Cys	Thr	Leu	Pro	Ala	Val
				485					490					495	
Cys	Leu	Leu	Thr	Asn	Lys	Phe	Ile	Ile	Pro	Gln	Ile	Ser	Asn	Leu	Ala
			500					505					510		
Ser	Ile	Trp	Phe	Ile	Ser	Leu	Phe	Leu	Ser	Ile	Phe	Ala	Thr	Gly	Ile
	515						520					525			
Leu	Lys	Met	Lys	Trp	Asn	Gly	Val	Gly	Ile	Asp	Gln	Trp	Trp	Arg	Asn
	530					535					540				
Glu	Gln	Phe	Trp	Val	Ile	Gly	Gly	Val	Ser	Ala	His	Leu	Phe	Ala	Val
545					550					555					560
Phe	Gln	Gly	Leu	Leu	Lys	Val	Leu	Ala	Gly	Ile	Asp	Thr	Asn	Phe	Thr
			565						570					575	
Val	Thr	Ser	Lys	Ala	Ser	Asp	Glu	Asp	Gly	Asp	Phe	Ala	Glu	Leu	Tyr
			580					585					590		
Met	Phe	Lys	Trp	Thr	Thr	Leu	Leu	Ile	Pro	Pro	Thr	Thr	Leu	Leu	Ile
		595					600						605		
Ile	Asn	Leu	Val	Gly	Val	Val	Ala	Gly	Ile	Ser	Tyr	Val	Ile	Asn	Ser
	610					615					620				
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625					630					635					640
Trp	Val	Ile	Ile	His	Leu	Tyr	Pro	Phe	Leu	Lys	Gly	Leu	Met	Gly	Arg
				645					650					655	
Gln	Asn	Arg	Thr	Pro	Thr	Ile	Val	Val	Val	Trp	Ser	Ile	Leu	Leu	Ala
			660					665					670		
Ser	Ile	Phe	Ser	Leu	Leu	Trp	Val	Arg	Ile	Asp	Pro	Phe	Thr	Thr	Arg

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 Gly Glu Pro Phe Val Ala Cys Asn Glu Cys Ala Phe Pro Val Cys Arg
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 Pro Cys Tyr Glu Tyr Glu Arg Arg Glu Gly Asn Gln Ala Cys Pro Gln
 65 70 75 80

 Cys Lys Thr Arg Phe Lys Arg Leu Lys Gly Ser Pro Arg Val Glu Gly
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 Asp Glu Glu Glu Asp Asp Ile Asp Asp Leu Asp Asn Glu Phe Glu Tyr
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 Gly Asn Asn Gly Ile Gly Phe Asp Gln Val Ser Glu Gly Met Ser Ile
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 Ser Arg Arg Asn Ser Gly Phe Pro Gln Ser Asp Leu Asp Ser Ala Pro
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 Pro Gly Ser Gln Ile Pro Leu Leu Thr Tyr Gly Asp Glu Asp Val Glu
 145 150 155 160

 Ile Ser Ser Asp Arg His Ala Leu Ile Val Pro Pro Ser Leu Gly Gly
 165 170 175

 His Gly Asn Arg Val His Pro Val Ser Leu Ser Asp Pro Thr Val Ala
 180 185 190

 Ala His Arg Arg Leu Met Val Pro Gln Lys Asp Leu Ala Val Tyr Gly
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 Tyr Gly Ser Val Ala Trp Lys Asp Arg Met Glu Glu Trp Lys Arg Lys
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 Gln Asn Glu Lys Leu Gln Val Val Arg His Glu Gly Asp Pro Asp Phe
 225 230 235 240

 Glu Asp Gly Asp Asp Ala Asp Phe Pro Met Met Asp Glu Gly Arg Gln
 245 250 255

 Pro Leu Ser Met Lys Ile Pro Ile Lys Ser Ser Lys Ile Asn Pro Tyr

260					265					270					
Arg	Met	Leu	Ile	Val	Leu	Arg	Leu	Val	Ile	Leu	Gly	Leu	Phe	Phe	His
		275					280					285			
Tyr	Arg	Ile	Leu	His	Pro	Val	Lys	Asp	Ala	Tyr	Ala	Leu	Trp	Leu	Ile
	290					295					300				
Ser	Val	Ile	Cys	Glu	Ile	Trp	Phe	Ala	Val	Ser	Trp	Val	Leu	Asp	Gln
305						310					315				320
Phe	Pro	Lys	Trp	Tyr	Pro	Ile	Glu	Arg	Glu	Thr	Tyr	Leu	Asp	Arg	Leu
				325					330					335	
Ser	Leu	Arg	Tyr	Glu	Lys	Glu	Gly	Lys	Pro	Ser	Gly	Leu	Ser	Pro	Val
			340					345					350		
Asp	Val	Phe	Val	Ser	Thr	Val	Asp	Pro	Leu	Lys	Glu	Pro	Pro	Leu	Ile
		355					360					365			
Thr	Ala	Asn	Thr	Val	Leu	Ser	Ile	Leu	Ala	Val	Asp	Tyr	Pro	Val	Asp
	370					375					380				
Lys	Val	Ala	Cys	Tyr	Val	Ser	Asp	Asp	Gly	Ala	Ala	Met	Leu	Thr	Phe
385						390					395				400
Glu	Ala	Leu	Ser	Glu	Thr	Ala	Glu	Phe	Ala	Arg	Lys	Trp	Val	Pro	Phe
				405					410					415	
Cys	Lys	Lys	Tyr	Cys	Ile	Glu	Pro	Arg	Ala	Pro	Glu	Trp	Tyr	Phe	Cys
			420					425					430		
His	Lys	Met	Asp	Tyr	Leu	Lys	Asn	Lys	Val	His	Pro	Ala	Phe	Val	Arg
		435					440					445			
Glu	Arg	Arg	Ala	Met	Lys	Arg	Asp	Tyr	Glu	Glu	Phe	Lys	Val	Lys	Ile
	450					455					460				
Asn	Ala	Leu	Val	Ala	Thr	Ala	Gln	Lys	Val	Pro	Glu	Asp	Gly	Trp	Thr
465						470					475				480
Met	Gln	Asp	Gly	Thr	Pro	Trp	Pro	Gly	Asn	Ser	Val	Arg	Asp	His	Pro
				485					490					495	
Gly	Met	Ile	Gln	Val	Phe	Leu	Gly	Ser	Asp	Gly	Val	Arg	Asp	Val	Glu
			500					505					510		
Asn	Asn	Glu	Leu	Pro	Arg	Leu	Val	Tyr	Val	Ser	Arg	Glu	Lys	Arg	Pro
		515					520					525			
Gly	Phe	Asp	His	His	Lys	Lys	Ala	Gly	Ala	Met	Asn	Ser	Leu	Ile	Arg
	530					535					540				
Val	Ser	Gly	Val	Leu	Ser	Asn	Ala	Pro	Tyr	Leu	Leu	Asn	Val	Asp	Cys
545						550					555				560
Asp	His	Tyr	Ile	Asn	Asn	Ser	Lys	Ala	Leu	Arg	Glu	Ala	Met	Cys	Phe
				565					570					575	
Met	Met	Asp	Pro	Gln	Ser	Gly	Lys	Lys	Ile	Cys	Tyr	Val	Gln	Phe	Pro

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Gln	Arg	Phe	Asp	Gly	Ile	Asp	Arg	His	Asp	Arg	Tyr	Ser	Asn	Arg	Asn						
		595					600					605									
Val	Val	Phe	Phe	Asp	Ile	Asn	Met	Lys	Gly	Leu	Asp	Gly	Leu	Gln	Gly						
		610				615					620										
Pro	Ile	Tyr	Val	Gly	Thr	Gly	Cys	Val	Phe	Arg	Arg	Gln	Ala	Leu	Tyr						
625					630					635					640						
Gly	Phe	Asp	Ala	Pro	Lys	Lys	Lys	Lys	Gly	Pro	Arg	Lys	Thr	Cys	Asn						
				645					650					655							
Cys	Trp	Pro	Lys	Trp	Cys	Leu	Leu	Cys	Phe	Gly	Ser	Arg	Lys	Asn	Arg						
			660					665						670							
Lys	Ala	Lys	Thr	Val	Ala	Ala	Asp	Lys	Lys	Lys	Lys	Asn	Arg	Glu	Ala						
		675					680					685									
Ser	Lys	Gln	Ile	His	Ala	Leu	Glu	Asn	Ile	Glu	Glu	Gly	Arg	Gly	His						
		690				695					700										
Lys	Val	Leu	Asn	Val	Glu	Gln	Ser	Thr	Glu	Ala	Met	Gln	Met	Lys	Leu						
705					710					715					720						
Gln	Lys	Lys	Tyr	Gly	Gln	Ser	Pro	Val	Phe	Val	Ala	Ser	Ala	Arg	Leu						
				725					730					735							
Glu	Asn	Gly	Gly	Met	Ala	Arg	Asn	Ala	Ser	Pro	Ala	Cys	Leu	Leu	Lys						
			740					745					750								
Glu	Ala	Ile	Gln	Val	Ile	Ser	Arg	Gly	Tyr	Glu	Asp	Lys	Thr	Glu	Trp						
		755					760					765									
Gly	Lys	Glu	Ile	Gly	Trp	Ile	Tyr	Gly	Ser	Val	Thr	Glu	Asp	Ile	Leu						
		770				775					780										
Thr	Gly	Ser	Lys	Met	His	Ser	His	Gly	Trp	Arg	His	Val	Tyr	Cys	Thr						
785					790					795					800						
Pro	Lys	Leu	Ala	Ala	Phe	Lys	Gly	Ser	Ala	Pro	Ile	Asn	Leu	Ser	Asp						
				805					810					815							
Arg	Leu	His	Gln	Val	Leu	Arg	Trp	Ala	Leu	Gly	Ser	Val	Glu	Ile	Phe						
			820					825					830								
Leu	Ser	Arg	His	Cys	Pro	Ile	Trp	Tyr	Gly	Tyr	Gly	Gly	Gly	Leu	Lys						
		835					840					845									
Trp	Leu	Glu	Arg	Leu	Ser	Tyr	Ile	Asn	Ser	Val	Val	Tyr	Pro	Trp	Thr						
		850				855					860										
Ser	Leu	Pro	Leu	Ile	Val	Tyr	Cys	Ser	Leu	Pro	Ala	Ile	Cys	Leu	Leu						
865					870					875					880						
Thr	Gly	Lys	Phe	Ile	Val	Pro	Glu	Ile	Ser	Asn	Tyr	Ala	Ser	Ile	Leu						
				885					890					895							
Phe	Met	Ala	Leu	Phe	Ser	Ser	Ile	Ala	Ile	Thr	Gly	Ile	Leu	Glu	Met						

900					905					910					
Gln	Trp	Gly	Lys	Val	Gly	Ile	Asp	Asp	Trp	Trp	Arg	Asn	Glu	Gln	Phe
		915					920					925			
Trp	Val	Ile	Gly	Gly	Val	Ser	Ala	His	Leu	Phe	Ala	Leu	Phe	Gln	Gly
	930					935					940				
Leu	Leu	Lys	Val	Leu	Ala	Gly	Val	Asp	Thr	Asn	Phe	Thr	Val	Thr	Ser
945						950					955				960
Lys	Ala	Ala	Asp	Asp	Gly	Glu	Phe	Ser	Asp	Leu	Tyr	Leu	Phe	Lys	Trp
				965					970					975	
Thr	Ser	Leu	Leu	Ile	Pro	Pro	Met	Thr	Leu	Leu	Ile	Ile	Asn	Val	Ile
			980					985					990		
Gly	Val	Ile	Val	Gly	Val	Ser	Asp	Ala	Ile	Ser	Asn	Gly	Tyr	Asp	Ser
	995						1000					1005			
Trp	Gly	Pro	Leu	Phe	Gly	Arg	Leu	Phe	Phe	Ala	Leu	Trp	Val	Ile	Ile
	1010					1015					1020				
His	Leu	Tyr	Pro	Phe	Leu	Lys	Gly	Leu	Leu	Gly	Lys	Gln	Asp	Arg	Met
1025						1030					1035				1040
Pro	Thr	Ile	Ile	Val	Val	Trp	Ser	Ile	Leu	Leu	Ala	Ser	Ile	Leu	Thr
				1045					1050					1055	
Leu	Leu	Trp	Val	Arg	Val	Asn	Pro	Phe	Val	Ala	Lys	Gly	Gly	Pro	Ile
			1060					1065					1070		
Leu	Glu	Ile	Cys	Gly	Leu	Asp	Cys	Leu							
	1075					1080									